

Appln. No.: 10/686,893
Amendment Dated November 30, 2005
Reply to Office Action of August 31, 2005

YAO-3990US3

Amendments to the Claims: This listing of claims will replace all prior versions, and listings, of claims in the application

Listing of Claims:

1.-7. (Cancelled)

8. (Currently Amended) A semiconductor device having a titanium material layer and a silicon oxide layer produced by a process including the step of:

etching at least one of the titanium material layer and the silicon oxide layer using an etchant, wherein

the titanium material layer includes at least one material selected from the group consisting of BaTiO_3 , SrTiO_3 , $\text{Ba}_x\text{Sr}_{(1-x)}\text{TiO}_3$, and similar Group IIA metal titanates, the titanium material layer is provided between an upper electrode and a lower electrode, and a contact window is provided for each of the upper electrode and the lower electrode; and

the etchant includes a mixed liquid of HCl , NH_4F and H_2O ; and

setting a molar ratio of $\text{NH}_4\text{F}/\text{HCl}$ in the mixed liquid, the molar ratio being set based on which of the at least one of the titanium material layer and the silicon oxide layer is to be etched.

9. (Previously Presented) The semiconductor device having a titanium material layer and a silicon oxide layer produced by a process according to claim 8, wherein the step of setting a molar ratio of $\text{NH}_4\text{F}/\text{HCl}$ includes setting the molar ratio of $\text{NH}_4\text{F}/\text{HCl}$ to less than 1 in the case where the titanium material layer is to be etched.

10. (Previously Presented) The semiconductor device having a titanium material layer and a silicon oxide layer produced by a process according to claim 8, wherein the step of setting a molar ratio of $\text{NH}_4\text{F}/\text{HCl}$ includes setting the molar ratio of $\text{NH}_4\text{F}/\text{HCl}$ to less than 1 in the case where the silicon oxide layer is to be etched.

11. (Previously Presented) The semiconductor device having a titanium material layer and a silicon oxide layer produced by a process according to claim 8, wherein the step of setting a molar ratio of $\text{NH}_4\text{F}/\text{HCl}$ includes setting the molar ratio of $\text{NH}_4\text{F}/\text{HCl}$ in the range from about 0.8 to about 1.2 in the case where both the titanium material layer and the silicon oxide layer are to be etched.